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A soft transition pathway towards sustainability in Belgian fisheries: stakeholder involvement as a tool for the development and implementation of a certification standard

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Abstract

The Belgian fishery sector is currently under pressure to convert to more sustainable fishing methods. First, the beam trawl (which accounts for more than 75% of all fishing by Belgian vessels) is contested due to its low selectivity and significant disturbance of the sea bed. Second, several downstream market players demand more information on the sustainability of the applied fishing methods. Finally, increasing pressure on crude oil markets has increased trip costs dramatically and competition from cheap imported fish undermines the price formation for domestically caught fish. We propose a certification standard for sustainably caught fish to overcome these pressures and to induce a soft transition towards sustainability in Belgian fisheries.

This paper explores how a participatory process can help shape the certification standard so that its adoption is facilitated. The paper focuses on the first steps of the development of the standard (using the Integrated Sustainability Assessment method as a framework); the interviews that were performed to capture the stakeholders' perception of sustainability and their vision on the certification standard as a tool to initiate the transition towards sustainability. Three questions were investigated: (1) Does the participatory process reveal unforeseen bottlenecks? (2) Does the participatory approach offer possibilities to overcome perceived bottlenecks and differences in opinion? (3) Do these new insights influence the a priori views of standard developers on the development of the standard and the selection of stakeholders.

The first step of the ISA method proved to be successful in identifying potential pitfalls and bottlenecks in the development of a certification standard. The scoping stage of the ISA method was capable of identifying new bottlenecks, fine-tuning perceived bottlenecks and identifying small nuances in stakeholders' opinions. Furthermore, it influenced our a priori views on the development of the standard on multiple levels. First, by reflecting on these new and confirmed bottlenecks, we came to a better understanding of the context in which we are aiming to develop this standard. Second, the scoping stage helped us to get a better insight in some specific matters that are of concern to the fishery sector (e.g. the alignment of incentives and the case of the beam trawl). All these insights may prove useful in the next stages of the ISA method, and thus for the development of the certification standard.

1. Introduction

The Belgian fishing fleet targets multiple fish species across many different fishing regions. The majority of the fishing fleet consists of beam trawlers of considerable age. In the eighties and nineties, beam trawling was considered the best option to maximize catch and profit. Currently, the Belgian fisheries sector experiences internal and external pressures to convert to more sustainable fishing methods. The beam trawl in particular is contested due to its low selectivity and significant disturbance of the sea bed. In the reformed Common Fisheries Policy (CFP), several measures are proposed by the European Commission, such as Individual Transferable Quota (ITQs) and a discard ban, that should propel more sustainable fishing methods.

Furthermore, downstream market players demand more information on the sustainability of the applied fishing methods. Finally, increasing pressure on crude oil markets has increased exploitation costs dramatically and competition with cheap imported fish undermines the price formation for domestically caught fish. All these pressures make the future of the Belgian beam trawl fleet uncertain. A hard top down transition in which the beam trawl is abolished and replaced by more sustainable fishing methods is not an option from a socio-economic perspective, but a soft transition through the market mechanism could prove more viable.

One of the most powerful market mechanisms that is currently available is increasing transparency through certification and labeling. Certification and labeling strategies are able to steer market actors in the desired direction of sustainability. Currently, several certification initiatives for fisheries products exist on the market, of which the MSC (Marine Stewardship Council) and FOS (Friend of the Sea) are the most widespread. Specific for the fishing sector is that certification is based upon targeted fish species within a specific region and time period with a prespecified fishing method, hence combining a product and process certification standard. The reason for this combination is that a particular fishing method may have a totally different environmental impact depending on the region and period of fishing.

However, the Belgian fishing fleet is not considering to apply for this type of certification. One main reason is the overabundance of the beam trawl (>75% of all vessels) which has difficulties to become certified in these high standard schemes, given its environmental impact. A second reason is the difficulty and costliness of certifying a fishery in which multiple species are targeted across different fishing regions, typical for the Belgian fishing strategy. As a result, currently no Belgian fish is marketed under a high standard certification scheme.

Given that the current state is undesirable, both due to internal and external pressures, and that the high standard certification schemes are currently unfeasible, the solution could be an intermediate environmental quality standard which allows a soft transition towards the high quality standard. This intermediate standard can focus on environmental and economic gains which could be achieved within the beam trawl strategy and can include engagement pathways for a full transition from beam trawling towards more sustainable fishing techniques.

Development of a certification standard for sustainable fisheries is a complex task, due to the many nonlinear interactions among fish stocks and their environment and the effect of human interference thereupon. Two important prerequisites need to be fulfilled in order to guarantee the success of the above mentioned intermediary certification standard. First and foremost, the underlying sustainability indicator system needs to be scientifically sound, to avoid setting of non-righteous claims and wrongly disadvantaging certain (non-)user groups. Second, the certification standard needs to be feasible from a stakeholder perspective, in order to guarantee (sufficient) adoption of the standard.

This paper explores how a participatory process can help shape the certification standard so that its subsequent adoption is facilitated. The paper focuses on the first steps of the development of the standard; the interviews that were performed to capture the stakeholders' perception of sustainability and their vision on the certification standard as a tool to initiate the transition towards sustainability. Three questions were investigated: (1) Does the participatory process reveal unforeseen bottlenecks? (2) Does the participatory approach offer possibilities to overcome perceived bottlenecks and differences in opinion? (3) Do these new insights influence the a priori views of standard developers on the development of the standard and the selection of stakeholders? We use these three questions to elaborate on the usefulness of incorporating a participatory approach in standard development and propose a framework on how to do so.

The paper is structured as follows. In section two the methodology of participatory model development is introduced and its virtues are illustrated by means of several literature and case study examples. This section further illustrates how participatory tools could be integrated in the process of standard development to facilitate adoption. The developed framework is applied to the case of an intermediate sustainability standard in fisheries. Section three reports the results of a first participatory phase for this case and the consequences for the next phases in the participatory research process. The paper ends with a discussion section and draws conclusions on the role of participation during standard development.

2. Methodology

2.1. The role of participation in tool development

Evidence shows that many decision support systems and tools are developed that are never applied in practice (Lynch and Gregor, 2004; Te Brömmelstroet and Schrijnen, 2010). Typically, researchers develop decision support systems or tools that they believe would best fit to the task, with little or no input from the users who are the intended beneficiaries, or whose cooperation is needed to collect the necessary data (Gaddis et al., 2010; Voinov and Bousquet, 2010). In such cases, the intended users complain that the developed tools require excessive data input, use an unfamiliar terminology and logic, are far too complex, or are incompatible with the intended decision tasks (Vonk et al., 2005; Hajkowicz and Higgins, 2008; Te Brömmelstroet and Schrijnen, 2010; Van Meensel et al., 2012). Furthermore, a lack of transparency hampers the users' confidence in the results (Mendoza and Prahbu, 2005; Voinov and Bousquet, 2010).

Therefore, in order to guarantee sufficient adoption of the certification standard, we consider it as a fundamental prerequisite to involve the intended users in the certification standard development. Active involvement of the intended users during tool development offers several benefits. First, the quality and relevance of the tool is expected to be higher thanks to the input of users' knowledge and the combination of lay and technical information (Lynch and Gregor, 2004; Gaddis et al., 2010; Kerselaers, 2012). A participatory process allows to identify bottlenecks in the development of the certification standard and different standard options and transition pathways towards sustainable fishing. Participation of the involved actors in the certification standard development assures that the actors are able and willing to collect the necessary data and that the developed system is applicable in practice. Moreover, it assures that the certification standard relates to the real needs of the stakeholders and meets the user's requirements (Lynch and Gregor, 2004; Te Brömmelstroet and Schrijnen, 2010; Voinov and Bousquet, 2010; Kerselaers, 2012; Van Meensel et al., 2012).

A second benefit of a participatory tool development is that users are more satisfied with the tool and are more likely to accept and use it. More specifically, stakeholders that participated in the tool development activities develop trust in the tool and are less likely to question the reliability of the

results, they take ownership of the developed tool, and the possibility that they actually use the certification standard increases (Lynch and Gregor, 2004; Mendoza and Prahbu, 2005; Alkan Olsson and Andersson, 2007; Goosen et al., 2007; Te Brömmelstroet and Schrijnen, 2010; Voinov and Bousquet, 2010). Primarily, that is because they will better understand the certification standard; they know the extent of its reliability and they know that it incorporates the best available knowledge and data. They also develop realistic expectations about system capabilities and understand that there will always be some imperfect information and uncertainty in the model's results (Lynch and Gregor, 2004; Gaddis et al., 2010; Voinov and Bousquet, 2010). Furthermore, the users are better trained in using the product and system implementation runs more smoothly (Goosen et al., 2007; Te Brömmelstroet and Schrijnen, 2010).

Finally, when stakeholders discuss the identified problem and collaboratively develop a certification standard that helps to find a solution for it, this stimulates a learning process among the stakeholders. The certification standard development can serve as an excellent forum for sharing and exchanging ideas among participants, learning about each other's perspectives on the decision problem and to collectively identify possible interventions to tackle the problem (Mendoza and Prahbu, 2005; Saroinsong et al., 2007; Gaddis et al., 2010; Jakku and Thorburn, 2010; Te Brömmelstroet and Schrijnen, 2010). Such a process can change the participants' beliefs, mental models, intentions and behavior and as such, address potential conflicts and misunderstandings. Moreover, this also provides insight in the underlying goals, values and frameworks that guide their actions. This is not only useful for the stakeholders themselves, but also for the scientists and policy makers who are in charge of the transition process towards a more sustainable fishery. Consequently, it is expected that this learning process leads to improved decision making processes and high quality resolutions (Lynch and Gregor, 2004; Gaddis et al., 2010).

2.2. User participation applied to the intermediate certification standard

A certification standard measuring progress towards environmental and social sustainability in mixed fisheries should be based on a scientifically sound and widely accepted framework, to allow broad support and acceptance and to avoid trust issues, amongst other relating to '*green washing*'. The Sustainable Development Reference System (SDRS) (FAO, 1999) is widely accepted as the reference system to assess sustainability in fisheries.

The SDRS is a coherent approach to selecting indicators, reference points and the framework within which to use them.

The scope of the reference system is limited to the activity of fishing itself as the envisaged outcome is a certification standard for sustainably caught fish. A set of well-chosen indicators describes fishing activity from an ecological, economic and social perspective. These indicators measure progress towards sustainability and allow for comparison between fishing operations through time. The framework in which they are embedded is derived from the indicator framework of the UN Commission on Sustainable Development (CSD) (UN, 1992).

To allow for the soft market based transition from the current mixed fisheries to more sustainable mixed fisheries, an intermediate certification standard is proposed, which will be rooted in this SDRS-framework. Given that current vessel types cannot be easily replaced by more sustainable types, due to the high investment costs involved, the developed standard should incorporate both medium term intermediate sustainability targets as well as long term sustainability targets. Which rules to integrate, how important these rules are and how a participant's position and progress is measured, is however not only a scientific but also a political process, which depends heavily on choices made by the standard developers. The identification of preferred transition pathways will be achieved through stakeholder participation.

The Integrated Sustainability Assessment (ISA) method (Buhonovsky et al., 2011) is an approach designed to initiate transitions towards sustainability. This method will form the framework for the design of our certification standard. ISA is a particularly useful method for this as each step of the development of the standard can be described as a stage in the process. Visions of a sustainable future form the starting point of ISA and are developed in a participatory way. Four different stages are identified in the ISA method (Fig. 1). The scoping stage involves a definition of the persistent problems and aims at developing a context-specific interpretation of sustainability that is supported by a wide range of stakeholders (Buhonovsky et al., 2011). In the envisioning stage, different scenarios or pathways towards sustainability are developed. The experimenting stage tests the robustness, consistency and feasibility of proposed actions. The final stage is about monitoring, evaluating and learning. In this stage, learning experiences are made explicit. These experiences then form the input for the second cycle of ISA (Fig. 1).

In the *scoping stage*, we identified stakeholders, experts and decision-makers and defined the persistent problem. Through interviews, their visions on sustainability were obtained and a general description of the problem was made. The interviews were structured around several open questions in which we gauged the stakeholder's notion of sustainable fisheries and their perception of a certification standard as a pathway towards a sustainable fishing fleet. These questions were: (1) What is your concept of a sustainable fishery? (2) How sustainable is, in your opinion, the current Belgian fishery sector? (3) How do you think a certification standard can initiate and/or accelerate the process towards sustainability? (4) Which bottlenecks do you expect to arise when designing this standard? For the interviews we selected a number of respondents from different stakeholder groups who were considered to be most informed and relevant in defining the persistent problem (Creswell 2003). In total, 9 respondents were interviewed, spread over the various actor groups involved, being Policy and Management (4 respondents), Industry (4 respondents) and NGOs (1 respondent). (Table 1). Each interview lasted between 30 minutes and 1 hour. Interviews were performed between September and December 2012.

The input for this stage is the persistent problem. In multistakeholder processes and discussion sessions with fishermen, specific questions related to sustainability are tackled. The output of the envisioning stage will consist of several scenarios for a sustainable future and a certification standard that allows to measure the sustainability of the Belgian fishing fleet. In the *experimenting and implementation stages* (May 2013 – October 2014) we will then work out the scenario that is most supported by a wide range of stakeholders. This scenario then forms the base for the development of a Sustainable Development Reference System (SDRS). In this paper we report only on the results of the first stage of the ISA.

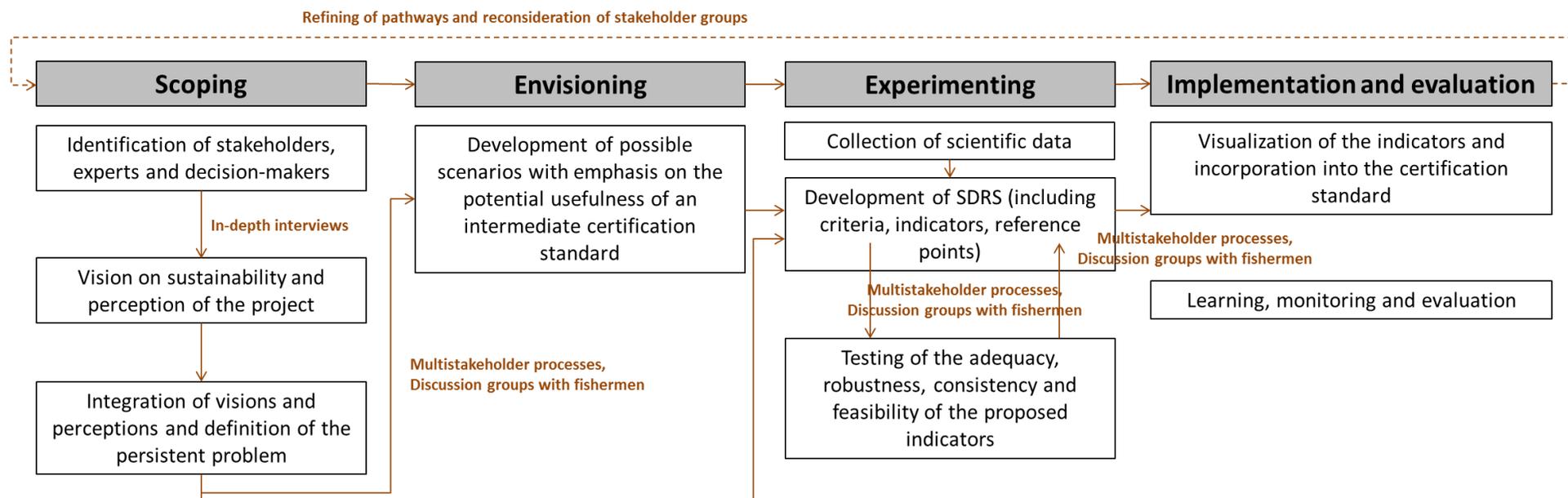


Figure 1: Data collection at different stages of the research, based on the Integrated Sustainability Assessment (ISA) method (after Buhonovsky et al. 2011).

3. Results and discussion

Based on the interviews, we gained insight in the perception of the various interviewees concerning the concept of sustainability, the current sustainability of the Belgian fishing fleet and the possible contribution of a certification standard in stimulating a process towards more sustainability. Moreover, information was gathered about the bottlenecks the interviewees expect to arise when designing and implementing such a standard. Table 1 summarizes the interview information.

Concept of sustainable fisheries

The first insight that can be derived from the interviews is a general lack of knowledge about sustainability in fisheries. This was especially true for

the private actors, who seem to use an incomplete definition of sustainability. Their concept of sustainability is limited to the legal boundaries within which fisheries operate in the European Union. In their view, fishing is sustainable when fishing operations respect quotas and comply to European legislation. Scholars define sustainable fishing as fishing activities that do not cause or lead to undesirable changes in the biological and economic productivity, biological diversity, or ecosystem structure and functioning from one human generation to the next (National Research Council, 1998). This definition incorporates all alterations to the natural environment, including damage caused by fishing gears and bycatch of vulnerable species.

Current state of Belgian fisheries

When looking at the Belgian fishery, there are different opinions. Several interviewees believe that the Belgian fishermen already fish sustainably. Another group thinks efforts have already been made, but improvement is still necessary. Within the latter group, a number of people believe that beam trawl can be made a sustainable fishing gear, whereas others emphasize that the beam trawl strategy should be abandoned because it can never be truly sustainable.

Beam trawling is indeed under pressure because it is known to cause severe stress to marine life and habitats (Kaiser et al., 2006). In their proposal for the reform of the Common Fisheries Policy (CFP), the European Commission states that the use of gears that negatively impact marine life and habitats will be limited (European Commission, 2013). Interestingly, beam trawling as a recurrent theme in these meetings suggests this strategy is indeed contested and that the sector is well-aware of the impact of this gear on the seabed. There are several reasons for the reluctance towards abandoning the beam trawl. First, Belgian fishermen have decades of expertise in fishing with the beam trawl. Changing to a different technique requires training and lots of trial and error. Second, in order to fish with a different technique the fishing vessel has to be converted, which requires massive investments. Third, the number of fishing days per vessel is lower for some of the more sustainable fishing techniques.

Role of a certification standard

While all of the respondents expressed their believe in the usefulness of a certification standard to generate additional information and incentives for the involved actors, there was a clear difference in opinion with respect to the strategic role of the standard. Industry players see the standard as a tool to promote current Belgian fisheries, as a response to other certification initiatives in fisheries which are currently infeasible due to the high certification cost. Other actors pronounce the role of a certification standard to facilitate the adoption of new, more sustainable, fishing techniques and to make a soft, market-based transition towards a more sustainable fishing fleet.

Furthermore, in subsequent meetings and informal conversations it became apparent that some of the stakeholders are more averse towards the idea of a certification standard than they admitted in the first interviews. The reason for this reluctance appears to be a concern that it would put beam trawling in a bad light.

Perceived bottlenecks

Perceived bottlenecks differ between stakeholder groups, but can, to a great extent, be related to the bottlenecks already identified in the previous paragraphs. While fishermen fear the absence of sufficient financial incentives to make the transition to more sustainable gear (or vessels), the environmental pressure group fears that the environmental targets will not be met due to the private actors' interest in maintaining the status quo. Currently, it is foreseen that information on sustainability will be displayed on the auction clock, enabling buyers to express their preference for certified products by means of a price signal.

Implications for the next phases in the participatory standard development

What can be learned from this scoping phase with respect to the research questions (RQ) defined in section 1? (RQ1) Does the participatory process reveal unforeseen bottlenecks? (RQ2) Does the participatory approach offer possibilities to overcome perceived bottlenecks and differences in opinion? (RQ3) Do these new insights influence the a priori views of standard developers on the development of the standard and the selection of stakeholders?

The open question on the definition of sustainable fisheries did not raise unforeseen bottlenecks (RQ1), but it is clear that in the following participatory steps for development of the certification standard, specific action has to be undertaken to merge the views of scientists, pressure groups, industry players and policy makers, to come to a shared definition on sustainable fisheries (RQ2). It

also makes clear that the developed standard has to incorporate both economic and environmental incentives and progress to keep the different stakeholder groups engaged (RQ3).

	Q1	Q2	Q3	Q4
Policy and management	3 out of 4 interviewees have a fairly good concept of sustainability in fisheries. The interviewees described a sustainable fishery as a fishery that is managed based on scientific data in a broader ecological context.	2 out of 4 interviewees believe that the Belgian fishermen already fish sustainably.	All interviewees were convinced that a certification standard would benefit the fishing sector by offering fishermen incentives to adopt more sustainable techniques. One of the interviewees expressed his concern that a certification standard may polarize the Belgian fishermen. Another interviewee believes that developing such a standard is crucial as already today, certain supermarkets source only sustainably caught fish.	Expected bottlenecks included: (1) resistance of fishermen and the producers organization, (2) creating the right incentives for fishermen and ship owners (3) developing an objective and widely accepted evaluation system for sustainability is a challenge, (4) different goals and agendas may impede the process.
Industry	3 out of 4 interviewees had a straightforward answer ready to this question, but their definitions of sustainable fishing differed substantially from those of the policy-makers and were not always correct. 2 out of 4 interviewees were skeptical about the impact of bottom gear on the seabed.	3 out of 4 interviewees agree that more efforts can be made towards sustainable fisheries. One interviewee emphasized past actions that improved sustainability in Belgian fisheries and stated that the beam trawl was now a sustainable fishing gear.	All interviewees were convinced that a certification standard would benefit the fishing sector. All four of them, however, expressed the desirable outcome of this standard according to their personal agendas. It became apparent that some of them lacked understanding of the term 'sustainability' and the potential usefulness of the certification standard.	Different bottlenecks were pointed out, often based on personal concern: (1) a lack of time to complete the standard, (2) developing an objective and widely accepted evaluation system for sustainability is a challenge, (3) an assumed shortage of funds to realize the goals of the project, (4) several practical difficulties (e.g. organization in the fish auctions, visualization of sustainability, control mechanisms, etc.), (5) resistance of fishermen and the producers organization. Some interviewees also stressed the importance of a pilot project and a follow-up project for the implementation of the standard.
Environmental NGO	The interviewee's definition of a sustainable fishery was similar to that of the policy-makers, but she emphasized the importance of reducing the ecological impact on other species and marine habitats.	N/A	The interviewee was convinced that a certification standard would benefit the fishing sector by offering fishermen incentives to adopt more sustainable techniques. Furthermore, the interviewee states that it could initiate a process towards sustainability in Belgian fisheries.	The interviewee fears that the strong position of the beam trawl in Belgian fisheries will impede the development of the standard and the transition towards a sustainable fleet.

Table 1: summary of the answers to the open questions around which the interviews were built. Q1: What is your concept of a sustainable fishery? Q2: How sustainable is, in your opinion, the current Belgian fishery sector? Q3: How do you think a certification standard can initiate and/or accelerate the process towards sustainability? Q4: Which bottlenecks do you expect to arise when designing this standard?

The open question on the current state of the Belgian fisheries did not generate unforeseen bottlenecks (RQ1). An expected bottleneck is the difference in opinion between stakeholders on the ecological impact of the beam trawl. The various responses generated a more nuanced picture of this beam trawl, indicating several improvements which have been made recently. As a subsequent research step, beam trawl vessels will have to be split into different classes to be able to assess their environmental impact correctly. To overcome this difference in opinion, it is clear that in the next phase of the participatory process additional scientific information is needed to fuel the debate

(RQ2). It might be necessary to invite additional experts to the network to further clarify this issue (RQ3).

The open question on the role of the certification standard revealed the different expectations of the stakeholder groups with respect to the standard, with private actors seeing it primarily as a promotion tool, while other actors see it as a tool to initiate the transition towards sustainable fisheries. This is highly informative for subsequent phases and for final standard adoption. There is a clear relationship between this bottleneck and the previous ones (RQ1). Both views seem to oppose, indicating that the next step in the research will have to generate additional scientific information on environmental impact of the current state of the fleet, as well as possible future states. The research also has to focus on how both views can be incorporated in the standard. Not incorporating the upstream market actors' view might hamper broad adoption, while not incorporating transition paths to more sustainable fishing techniques might result in greenwashing. One option to merge both views is to work with upper and lower benchmarks, indicating efforts already done and efforts still possible. Subsequent participatory phases will therefore have to focus on identifying how progress can be reconciled with the current position of market players (RQ2). For the involved standard developers, this open question revealed that incentives to participate differed considerably among stakeholders, and often deviated from the developers' views. This results in a trade-off between keeping stakeholder groups on board and keeping the quality of the standard sufficiently high. It urges the developers to identify the scientific degrees of freedom with respect to lower and upper boundaries of the standard. In the subsequent research phase, it might be interesting to make a comparative analysis with other, more established schemes on how they dealt with this issue (RQ3).

Finally, the open question on perceived bottlenecks made clear that the main bottleneck is the type of incentive system that can accompany the standard and whether the previewed type will satisfy the different needs (RQ1). The interviews helped us to refine and adjust the anticipated bottleneck. For instance, we may have misjudged the incentives for fishermen and ship owners to participate in designing and implementing a certification standard. A priori, we thought that the main incentive would be that the fishermen would get a better price for sustainably caught fish. This was contested by one of our stakeholders in the interviews. According to him, the main argument to convince fishermen of the usefulness of a certification standard is improved market access rather than a better price. As several Belgian retailers have announced to sell only sustainably caught fish within the shortest term possible, it is of great importance for Belgian fishermen to maintain access to these markets. One of the next phases in the research therefore has to be the elaboration of various incentive system models, which can be discussed with the different stakeholder groups (RQ2). Although previewed, this open question highlights the importance of accompanying the standard with an appropriate incentive system. Not succeeding will result into non-adoption. Focus also has to rest on the role of other players, such as policy makers, retailers and consumers, to make this incentive system work. It might furthermore be interesting in this phase to incorporate knowledge from other certification schemes focusing on sustainability and working with auctioned produce (RQ3).

We conclude that the first step of the ISA method was successful in identifying potential pitfalls and bottlenecks in the development of a certification standard. The scoping stage of the ISA method was capable of identifying new bottlenecks, fine-tuning perceived bottlenecks and identifying small nuances in stakeholders' opinions. Furthermore, it influenced our a priori views on the development of the standard on multiple levels. First, by reflecting on these new and confirmed bottlenecks, we came to a better understanding of the context in which we are aiming to develop this standard. Second, the scoping stage helped us to get a better insight in some specific matters that are of concern to the fishery sector (e.g. the alignment of incentives and the case of the beam trawl). All

these insights may prove useful in the next stages of the ISA method, and thus for the development of the certification standard.

By explicitly integrating the participatory approach in the scientific process of standard development, as a tool for steering and feedback, scientists that are developing the standard were able to circumvent important pitfalls and redirect research efforts. The results of this first phase already indicate that not explicitly considering the participatory process would increase distrust and potential conflict, potentially leading to either low standard adoption rates or greenwashing. The participatory approach furthermore offers tools to overcome these issues of distrust and conflict, to find a balance between feasibility and effectiveness of the standard. The first phase also indicated that a successful participatory process, and eventually a successful certification standard, depends heavily on involving the right stakeholder groups, and to leave sufficient room for differences in opinion. The participatory process not only works as a mechanism to share information and to obtain consensus, but it is also a gradual social learning process, over time creating trust and support for the commonly developed concepts and ideas.

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